

MONA RESERVOIR



Introduction

Mona Reservoir is a large reservoir at the north end of Juab Valley in Central Utah, located near I-15 between Santaquin and Nephi and west of Mount Nebo. It is typical of Great Basin reservoirs, being in a flat valley of alluvial deposits surrounded by mountains. It is also known as Mount Nebo Reservoir.

Characteristics and Morphometry

Lake elevation (meters / feet)	1,488 / 4,882
Surface area (hectares / acres)	4,490 / 1,110
Watershed area (hectares / acres)	20,760 / 51,273
Volume (m ³ / acre-feet)	
capacity	33,300,000 / 26,973
conservation pool	0
Annual inflow (m ³ / acre-feet)	
Retention time (years)	
Drawdown (m ³ / acre-feet)	
Depth (meters / feet)	
maximum	7.01 / 23
mean	5.18 / 17
Length (km / miles)	7.49 / 4.65
Width (km / miles)	1.58 / .97
Shoreline (km / miles)	17.5 / 10.9

Mona Reservoir was created in 1895 by the construction of an earth-fill dam. The reservoir is privately

Location

County	Juab
Longitude / Latitude	111 52 53 / 39 52 24
USGS Maps	Mona, UT 1979, Santaquin, UT 1979
DeLorme's Utah Atlas & Gazetteer™	Page 45, B-5
Cataloging Unit	Utah Lake (16020201)

owned, and access is restricted. Water use is primarily for irrigation, and recreation with no changes are foreseen in the future. It is anticipated that the Central Utah Project will bring water from the Spanish Fork River to Mona Reservoir, but the details have not yet been determined (Dec. 1992).

Recreation

Mona Reservoir is accessible from the Mona-Goshen Road. This is a paved road running from I-15 (Exit #236) east to Mona, across Currant Creek, then bending north towards Goshen, following Currant Creek's canyon

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Long Ridge and arriving at US-6 in downtown Goshen. The turnoff to Mona Reservoir is 7 km northwest from Mona and 10 km south from Goshen. The dam is 2 km east on a dirt road. Boats can be launched at the dam, and vehicles can travel north or south along the reservoir.

The lake is used for fishing, boating and waterskiing. Usage is light. There are no facilities located at the reservoir. This is a private reservoir and was once closed to public use, so please be considerate and pick up litter, etc. There are private campgrounds in Nephi (see info box), but no public camping in the area.

Watershed Description

The centerpiece of the watershed, geographically and in runoff production, is Mount Nebo. Although the valley floor itself is not particularly scenic, Mount Nebo rises over 7,000 feet above the valley, with no foothills to obscure the view of the jagged peaks, and nearly 40 inches of precipitation fall on its summit. Much of the high area is federally protected wilderness.

Mona Reservoir is an impoundment of Currant Creek, (this is a different Currant Creek than the reservoir of that name in Wasatch County) which drains the east slopes of Mount Nebo, flows around to the front and up the valley to the impoundment. The streams on the west face of Nebo historically drained into Currant Creek, but are now diverted for irrigation. The watershed also drains Long Ridge to the west, the northern San Pitch mountains, and much of the mountainous region east of Mount Nebo.

The watershed high point, Mount Nebo, is 3,636 m (11,959 ft) above sea level, thereby developing a complex slope of 24.1% to the reservoir. The inflow and outlet is Currant Creek. Inflow also includes some springs on the east side of the reservoir. The average stream gradient in the valley upstream from the reservoir is about 10% (53 feet per mile), with much higher gradients in the mountains.

The watershed is comprised of alluvial plains, alluvial fans, low mountains and high mountains. See Appendix III for soil composition data.

The vegetation communities consist of alpine, pinyon-juniper, spruce-fir, aspen, oak-maple, sagebrush-grass, bitterbrush, shadscale, and greasewood. The watershed receives 30 - 76 cm (12 - 30 inches) of precipitation annually. The frost-free season around the reservoir is 140 -160 days per year.

According to the 1982 Clean Lakes Inventory, land use is as follows. The largest use is native grazing (mostly cattle and sheep) which comprises 36% of the watershed. Other uses are multiple use 25%, pasture, hay, and croplands 15%, non-irrigated cropland 15%, wildlife 7%, urban 1% and recreation 1%.

Limnological Assessment

The water quality of Mona Reservoir is moderately good. It is considered to be very hard with a hardness concentration value of approximately 315 mg/L (CaCO₃). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus. The average concentration of total phosphorus in the water column in 1981 and 1992 was 48.3 and 217 ug/L which exceeds the recommended pollution indicator for phosphorus of 25 ug/L. The phosphorus concentration in the hypolimnion in September, 1992 reached a level of 391 ug/L. This increased concentration occurred when the reservoir was very shallow and resuspension of bottom sediments occurred.

Although in 1981 the reservoir was characterized as

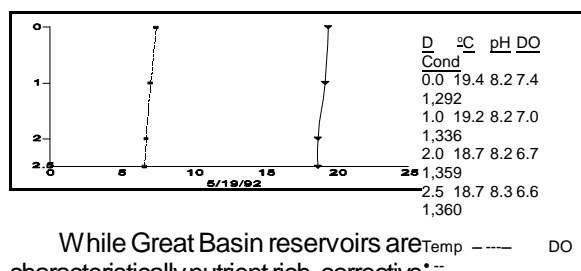
Limnological Data		
Data sampled from STORET site: 491298, 491299, 491307		
Surface Data	<u>1981</u>	<u>1992</u>
Trophic Status	E	E
Chlorophyll TSI		41.38
Secchi Depth TSI	54.75	77.35
Phosphorous TSI	60.06	81.46
Average TSI	57.40	66.73
Chlorophyll <i>a</i> (ug/L)		3.0
Transparency (m)	1.4	0.3
Total Phosphorous (ug/L)	41.5	213
pH	8.3	8.1
Total Susp. Solids (mg/L)	38	168.50
Total Volatile Solids (mg/L)		5
Total Residual Solids (mg/L)		164
Temperature (°C / °f)	18/64	20/68
Conductivity (umhos.cm)	1,658	1,086
Water Column Data		
Ammonia (mg/L)	0.09	0.03
Nitrate/Nitrite (mg/L)	0.20	0.09
Hardness (mg/L)	421	315
Alkalinity (mg/L)	242	212
Silica (mg/L)		-
Total Phosphorous (ug/L)	48.3	217
Miscellaneous Data		
Limiting Nutrient	P	N
DO (Mg/l) at 75% depth	7.6	8.1
Stratification (m)	NO	NO
Depth at Deepest Site (m)	4.0	0.2

a phosphorus limited system, the 1992 data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is hypereutrophic, but shallow

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condition during the last sampling trip aren't indicative of the overall trophic state due to the shallow nature of the reservoir at that time. The reservoir is probably still eutrophic as was indicated in 1981. The reservoir does not stratify due to its shallow nature.

Because of high evaporation rates and high nutrient input, most valley reservoirs in the Great Basin suffer from eutrophication, and this is no exception. It is unusual, though, in that the majority of the water comes from mountains in close proximity to the reservoir, resulting in short stream lengths and consequently cleaner water. The reservoir is rarely drained, but in 1992 it was completely emptied. During the last decade, floods have washed over 4' of silt into the reservoir, significantly reducing depth and capacity, and increasing the likelihood of the need for all of the stored water in the future.



While Great Basin reservoirs are characteristically nutrient rich, corrective measures could be taken to improve water quality, including careful monitoring and control of nonpoint sources of pollution within a the watershed. According to DWR no fish kills have been reported in recent years. It is occasionally stocked with fish by the DWR, the most recent stocking being 10,000 fingerling smallmouth bass (*Micropterus dolomieu*) in 1990. Burraston Ponds, one mile upstream from the reservoir, are stocked twice annually with catchable rainbow trout (*Oncorhynchus mykiss*), and some of these may reach Mona Reservoir. The reservoir contains self-sustaining populations walleye (*Stizostedion vitreum*), yellow perch (*Perca flavescens*), smallmouth bass, carp (*Cyprinus carpio*), utah chub (*Gila atraria*), black bullhead (*Ictalurus melas*), and other non-game fish. Zebra killifish and rainwater killifish (*Lucania parva*) live in Currant Creek above and below the reservoir. The reservoir was chemically treated by the DWR to control rough fish competition in 1960. The DWR plans to retreat the lake if funds become available, then restock with smallmouth bass and yellow perch, but no walleye.

Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm ³ /liter)	% Density By Volume
Pennate diatoms	7.395	90.37

<i>Melosira granulata</i>	0.433	5.29
Centric diatoms	0.356	4.35

Total 8.181

Shannon-Weaver [H']	0.38
Species Evenness	0.35
Species Richness	0.10

The phytoplankton community is dominated by the presence of diatoms. It should be noted that under such low water conditions that the limiting factor associated with productivity is probably turbidity.

Information

Management Agencies

Six County Commissioners Association	896-9222
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146

Recreation

Panoramaland Travel Region (Richfield)	896-9222
Nephi Chamber of Commerce	623-2411
High Mountain Campground (Nephi)	623-0550
Mountain View RV Park (Nephi)	623-0218

Reservoir Administrators

Currant Creek Irrigation Company	667-3203
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Pollution Assessment

Nonpoint pollution sources include the following: sedimentation and nutrient loading from grazing, feedlots and cropland; wastes and litter from recreation; household wastes and nutrient loading from urban areas; and sedimentation and heavy metal production from active and inactive mines. The major use of the watershed is livestock grazing and agriculture which may increase soil erosion. There is an active gypsum mine on the east side of Nephi, but runoff is said to be well contained. Another gypsum mine is proposed for a steep, narrow canyon in the Nebo Wilderness Area, which could increase erosion problems and may impact water quality in the reservoir.

The area around the reservoir is rangeland and cropland. These land uses have impact on the reservoir, including sediment production and contamination from agricultural chemicals.

Beneficial Use Classification

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), warm water game fish and organisms in their food chain (3B) and agricultural uses (4).

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